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SOME OBSERVATIONS ON THE DIAGNOSIS AND TREATMENT OF MAXILLARY SINUSITIS*

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This article is based upon one hundred cases of maxillary sinusitis taken at random from my office file.

Three were vaso-motor rhinitis cases, ten were vacuum antrum headache cases; two were atrophic rhinitis cases with ozena. Operation was made in fourteen per cent, and seventy-three were acute, subacute and chronic infections. Patients ranged in age from six to sixty-five years. Fourteen per cent had antrum infections on both sides. Two of the operative cases returned later for treatment, although they had been cured four and five years respectively; one with an acute maxillary sinusitis on the same side that had previously been operated upon, the other with an acute maxillary sinusitis on both sides.

Since writing a paper or this subject in 1918, the author has been impressed with the prevalence of maxillary sinusitis. It is very common in all seasons of the year and in all climates.

It is first seen by the general practitioner, who seldom recognizes it, as the symptoms in no respect point to sinus infection. The specialists as a general rule do not see these cases until they are far advanced and in a chronic state. The patients seek relief from a so called catarrh or headache that they attribute to eye strain. They are perhaps sent to a specialist for relief of foci of infection causing rheumatism, eye condition, or sent by the skin specialist to locate the foci of infection which causes lumpus, likus, planus, dermatitis, herpitiforum perpura, erthemotosis and herpes zoster. No age is immune. It seems to be as prevalent in childhood as in middle life. Maxillary sinusitis in my experience is much more frequent than sinusitis of any other sinus.

Dental infections are thought by many writers to be the most frequent cause of maxillary sinusitis, some put it at a hundred per cent. Skillern, the most conservative, places dental infection at twenty per cent. It is my opinion that even Skillern's estimate is far too high.

In only two of the above cases could the cause be traced to dental origin, but as the teeth had been pulled, leaving a sius draining in the mouth, there was a question whether the sinus was infected at the time the tooth was pulled or whether it existed previously. Both cases were cured by irrigation of the antrum before an attempt was made to close the opening into the mouth.

DIAGNOSIS

Infections of the nose and throat, especially from swimming pools, and following influenza, measles, scarlet fever, typhoid fever, colds and acute coryza, are the chief causes of maxillary sinusitis. Usually during attacks of colds, patients will be seized with the antrum headache. This may persist indefinitely or clear up of its own accord after drainage is established by the subsidence of inflammation and swelling of the nose.

Patients suffering from maxillary sinusitis are always subject to frequent colds.

Nowhere in the realm of medicine is an accurate history as important as in the diagnosis of maxillary sinusitis. A good history will bring out one of two things, pain or pus. Experience has demonstrated that in all cases of acute maxillary sinusitis as well as vacuum antrum headache, the patient complains of a distinct pain which is pathognomonic of the disease. If this peculiar antrum headache is studied, a diagnosis can invariably be made or at least lead to the investigation of the sinuses.

Many have written about the frontal headache in antrum infections, but I doubt if its importance as a diagnostic aid has

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been duly impressed upon the profession. In the writer's opinion, this peculiar antrum headache is far more important than the X-Ray, the transillumination, or both anterior and posterior rhinoscopy. It is for the relief of this peculiar antrum headache that the patient first consults the doctor. In chronic maxillary sinusitis, the pain or neuralgia is often present, but not so constant or severe as in acute cases. A good history will usually reveal periodic attacks of this peculiar antrum pain; however, in some cases the pain is not pathognomonic, but is most severe in the temple region.

The antrum headache is often associated with other forms of headache. For example: May 14, 1920, one of my patients came in to have her eyes tested for relief of headache of four years' duration. The pain was severe over both temples—constant, night and day. She also complained of occipital headache with the muscles of the neck sore. Anterior and posterior rhinoscopy revealed no pus in either nostril. Transillumination, negative, although the eye reflex was not as clear as normal. A diagnosis was made of indurated headache and probable eye strain. Eyes were tested May 14th and spherocylinders prescribed. Infected tonsils were removed May 15, 1920. Patient went home, to return January 31, 1921, reporting posterior headache entirely relieved, but the pain in the temples was as severe as ever. Again transillumination made, with same findings as before. Rhinoscopy revealed nothing. In spite of this, both maxillary sinuses were irrigated and a small amount of pus found in each. The irrigation was continued daily until the sinuses were clear, on February 12th. The pain was relieved after the third irrigation. In June of the same year, or four months later, the patient made a trip to Oklahoma City to express her appreciation, reporting entire relief of her headache. This case illustrates three things:

First. Constant pain in a chronic maxillary sinusitis.

Second. Association of indurated headache with antrum pain.

Third. That irrigation cured a chronic sinusitis of four years standing without operation.

VACUUM ANTRUM HEADACHE

Vacuum antrum headache is the same headache complained of in acute and chronic maxillary sinusitis. So far as I know, there is no other way of making a diagnosis of vacuum sinus headache other than this pathognomonic antrum headache. Transillumination and X-Ray negative. No pus was found in any of my cases.

My first case of vacuum antrum headache, in June, 1918, was very interesting and instructive. The patient gave a history of constant antrum headache of two years' standing, so severe that she was taking sedatives to make her sleep. She was weak, emaciated, nervous and anæmic. Rhinoscopy anterior and posterior revealed nothing. Transillumination was neither positive or negative, in that the pupillary reflex was not distinct, nor was the antrum area as clear as normal. Irrigation showed no pus, nor could any pus be found in either nostril by means of the nasopharyngoscope. We were at a loss to know what caused her headache, and advised her to return on the morrow for further examination. Upon her return the following morning, to our amazement she reported entire relief from all headache, and that she had slept better the previous night than she had in two pears. In conversation with her physician, Dr. King, of Bristow, Oklahoma, this past summer, he told us that she had been entirely relieved of her headache and that it had not returned.

In some cases the vacuum antrum headache is most severe over the temples, as in chronic maxillary sinusitis. The patients invariably complain that constant use of the eyes increases their headache. In Dr. Sluder's book entitled, "Concerning Some Headaches and Eye Disorders of Nasal Origin", he gives a chapter on vacuum frontal headaches with eye symtoms only, and describes it as follows: "A low grade unending headache is established by the closing of the frontal sinus without nasal symptoms or signs, i.e., obstruction or secretion. Is made worse by use of the eyes." Again he says, "clinically, the headache is frontal but rarely may be referred to the external angular process of the frontal bone". Again he says, "the frontal sinus is most frequently involved in ninety-nine per cent of the cases and that the prognosis is difficult. The simplest treatment may be successful; other cases may be most stubborn." Personally, I have never seen a frontal sinus vacuum headache, or perhaps I had better say I have never diagnosed one.

Maxillary sinus headache begins at the junction of the eyebrow with the root of

the nose, extends over the eye to the temple and sometimes to the ear (most severe cases at the junction of the eyebrow and nose, except in chronic cases, when it appears to be most severe over the temples.) In most cases there is no pain over the antrum at all. In a few cases the pain seems to extend from the temple to the maxillary bone. In acute maxillary sinusitis, the pain is not constant. The patient may have a good night's rest and the pain come on in early morning, to last until four or five o'colck in the afternoon, and disappear; or the pain may be most severe at night with relief in the day time. With this pain, the patient has a fullness of the head. The eyes may feel sore, may have one or two degrees of fever and appear sick.

In chronic maxillary sinusitis, the most prominent symptom is pus, the patient complaining of a quantity of pus, either great or small, coming down the nasopharnyx. This may be the only symptom. Pain may be entirely absent, yet in a large majority of cases, the pain is severe over the temple of the side affected. Transillumination will indicate the involvement of the maxillary sinus. Irrigation of the antrum will complete the diagnosis. X-Ray is not used as it is not dependable nor necessary. A thickened mucous membrane or thickened bone will throw a shadow, either by transillumination or X-Ray.

In the frontal sinus, the X-Ray is always indicated; first, and most important, to determine whether or not a sinus is present; second, to show a diseased sinus. In maxillary sinusitis, it is not necessary, because the maxillary sinus is always present. Irrigation will clear the diagnosis. Chronic pharyngitis or a redness back of the posterior pillar, is often present in any sinusitis. Tinnitus aurium is frequently associated with chronic maxillary sinusitis. A persistent cough or bronchitis which will not yield to medication should lead one to investigate the maxillary sinuses. In several of my cases a persistent cough cleared up while treating the maxillary sinus.

Transillumination, while not positive, greatly aids in diagnosis. It should always be considered in connection with the clinical findings. A thickened bone or a thickened mucous membrane will throw a shadow, but in the absence of pus in the nose and the antrum headache, one should not expect a maxillary sinusitis.

Latent chronic sinusitis is perhaps the hardest to diagnose, however; the patient will give a history of periodic antrum headache and frequent exacerbations with copious secretions. Examination of the throat, in most cases, will show a pharyngitis, and with naso-pharyngoscope, mucopus can usually be seen in the naso-pharynx. In this class of cases transillumination is the least dependable as there is very little pus in the sinus to affect the shadow. There may be no pus to be seen by anterior rhinoscopy. Irrigation will complete the diagnosis.

VASO-MOTOR RHINITIS CASES.

In this series are included three vasomotor rhinitis cases, each giving a history of sneezing in all periods of the year with no intermissions.

TREATMENT

The vaso-motor rhinitis cases were treated by irrigation with normal salt solution. In explanation, however, I want to say that the first case so treated was done more by accident than otherwise.

Transillumination showed a rather dull reflex and opaqueness over the antrum. Irrigation was done but no pus found. The patient was advised to return for further observation and reported that he had not sneezed during the interim. Irrigation was kept up daily for about two weeks. The patient was free of sneezing for four or five months. The other two case were completely relieved while irrigation was kept up, but in both cases the sneezing began again in about a week. I have no explanation to make as to why a patient sensitised with some food product or pus proteid, should be entirely relieved by mere irrigation of the antrum.

NEEDLE PUNCTURE

There has been much discussion as to the danger of needle puncture. Several cases have been reported, but in my hands in some three thousand irrigations of the antra, I have not seen a single bad result where water has been used.

In an antrum puncture it is not necessary to use a large trocar nor any of the so called antrum irrigators. They are all too large and clumsy. Any small, straight needle about three inches long and one and one-half millimeters thick can be introduced between the naso-antral wall and the anterior end of the inferior turbinate. It is only necessary to cocainize this area as

there is very little pain in passing this sharp needle.

VACUUM ANTRUM HEADACHES

Vacuum antrum headaches were treated by irrigation, usually one treatment, a few cases, two treatments. It is surprising how quickly these cases clear up. One man, fifty years old, had vacuum antrum headache on both sides for twenty-five years and was entirely relieved by one irrigation of each sinus.

I have never operated for this headache, nor have I found it necessary. Prognosis in vacuum antrum headache is always good. I know of no work done by the rhinologist that is more satisfactory to himself or more gratifying to the patient. Again let me repeat that vacuum antrum headache is the same that is associated with all antrum cases. A knowledge of this headache by the general practitioner should ever put him on the guard as to the cause.

UNOPERATED CASES

The seventy-three unoperated cases were all treated by irrigation. Irrigation was kept up daily until all pus disappeared. The average number of irrigations was nine. In the real acute cases, three or four was sufficient. Headache is usually relieved after the third treatment, sometimes after the first.

OPERATIVE CASES

Irrigation was continued daily for ten days or two weeks; at the end of this time if there was no change in the odor, color, amount or consistency of the pus, all hope was given up of relieving the patient's condition by irrigation, and operation was advised.

OPERATION

Fourteen per cent were operated. All by the Canfield-Ballinger operation. This operation differs from the Canfield, in that no portion of the inferior turbinate is sacrificed, nor is the mucous membrane of the naso-antral wall preserved and turned into the antrum. Enough of bone constituting the canine fossa was removed to permit the introduction of the bone cutting forceps. The entire naso-antral wall is removed from the attachment of the inferior turbinate body to the floor, and from the naso-antral angle to the depths of the antrum behind, making an opening an inch and a half by five-eighths of an inch in size. The operation is both radical and conservative, in that a complete inspection of the interior of the entire antrum can be made at the time of the operation or later, and that no portion of the inferior turbinate is sacrificed. After healing takes place, the naso-antral wall is restored and the antrum returns to normal. I can see no useful purpose of obstructing the growth of the naso-antral wall, leaving a large permanent opening.

In none of my cases was an inspection of the interior of the antrum made, nor was the mucous membrane curetted. No packing was used, nor have I ever found packing necessary. In several of my cases of long standing, with abundance of putrid pus, I have expected that it would be necessary to re-operate. Such has never been the case, however. I have always felt, and feel now, that perfect darinage and ventilation will cure maxillary sinusitis. I am a believer in preserving all mucous membrane and causing as little trauma in the antrum as possible. I believe it better practice to introduce a naso-pharnygoscope to inspect the interior of the antrum to find the cause of failure to heal some time later, than to traumatize the mucous membrane at the time of operation in endeavor to keep the field clear by packing and repacking the antrum. No after treatment of any kind was used, and this is a point that I feel should be emphasized. Resolution will take place in an infected antrum whenever perfect drainage and good ventilation is established, and after-treatment, such as irrigation and medicinal application, is no more necessary than it is in ruptured appendix cases, in which after-treatment has been discarded long ago. I know of no operation done within the nose and throat when after-treatment is necessary. In fact, in most cases, it actually does harm. However, the patient is kept under constant observation until the nose is free of pus. This is more to encourage the patient than anything else. For the first week or ten days, the patient will complain of some pus in the nose. From that time on it gradually becomes less until at the end of four or five weeks it disappears entirely.

Two of my operated cases, one in 1917, the other in 1918, returned in the spring of 1922 with acute maxillary sinusitis of the same side previously operated. In both, the naso-antral wall had been entirely replaced, and the antrum needle had to be used as in unoperated cases. The fact of

their having had maxillary sinusitis did not in any way necessitate the prolongation of the treatment of the acute condition. They were both cured of their maxillary sinusitis by a few irrigations.

In children with maxillary sinusitis, the inferior turbinate is lifted upward and the entire naso-antral wall removed by a rasp with the exception of the naso-antral angle in front. No after treatment was used.

ATROPHIC RHINITIS CASES WITH OZENA

The first case was operated on in 1917. The patient gained seven pounds within two weeks following operation of the maxillary sinus. Later, the ethmoid and sphenoid were both operated. No after-treatment of any kind was used. Patient's recovery was complete both as to pus and the ozena.

The second patient was operated upon in 1921. Results as to maxillary sinusitis were good, but otherwise they were not satisfactory, as the pus and ozena still persist.

There is one objection to the Canfield-Ballinger operation, or any other operation yet devised for the relief of chronic maxillary sinusitis, that is, the cutting of the anterior, middle and posterior superior dental nerves and blood supply. These nerves are given off from the second division of the fifth nerve and pass through small foramen in the bone to supply the root of the teeth.

It is my belief that no portion of the naso-antral angle nor any part of the anterior wall of the maxillary bone can be removed without cutting these nerves and arteries. In the Canfield-Ballinger operation the anterior superior dental nerve, as well as the superior labial nerve, is cut, leaving a numbness of a portion of the upper lip and a dead feeling of the two incisors on the operated side. The numbness of the lip as well as the peculiar feeling of the teeth lasts for a considerable length of time. X-Ray pictures taken of several of my operated cases less than a year after operation, did not show abcesses at the roots of their teeth. I have not, however, investigated these cases long enough to know whether they are infected at a later date or not. It is always well to keep this in mind, however.

NASAL CONSERVATION*

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The nose is one of the most important organs of the body, like most essential parts, its functions are complicated and indefinite, it is of importance topographically, cosmetically, and physiologically, and as we reach a higher state of civilization, its work is increased, thereby increasing its relative physiological value to the welfare of the body.

Despite the fact that the nose is classified as one of the special sense organs, its greatest claim to importance is that it forms the advance guard to the respiratory tract, and as such, too much stress cannot be placed on its preservation.

The treatment and surgery of the nasal structures has made rapid strides in the last few years, leaving a vast number of dry and atrophic noses, that can never hope for relief, this condition was unavoidable, because the actual cause and effect of nasal surgery could only be determined by clinical observation which required time and a large number of cases, before definite conclusions could be arrived at.

Air is inhaled through the vestibule, carried directly up to the ethmoid region, where it is divided by the anterior end of the middle turbinate, two-thirds passing above into the superior meatus, and the remaining third passing into the middle meatus, the back through the superior and middle meati to the fossa of Rosemueller, where it passes over the orifice of the eustachian tubes, down into the throat as prepared air, ready for ingestion in the lungs. Physiological or normal breathing is a requisite of the body because of the special functions of the nose, that are dependent on ventliation, and because of the preparation of air for the lungs.

Nasal functions dependent on ventilation are in the order of least importance: 1. Gustatory. 2. Phonation. 3. Olfactory. 4. Ventilation of middle ears, by passing over the orifice of the eustachian tubes. thereby creating a negative pressure which assists drainage and by the interchange of air helps maintain the normal pressure within the middle ear. 5. Aeration of the nasal accessory sinuses, keeping their os-

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tei patulous and the lining mucous membrane normal, so that they can perform their functions, as insulators to the brain and assist in the moistening and warming of inspired air. 6. Cleansing the air of inspired foreign material and bacteria, the cilia act as a coarse filter and remove large quantities of foreign material and bacteria from the air, these are at once coated over by secretions from the mucous and serous glands of the nasal mucous membrane, and are removed by the action of the cilia or by the sneeze reflex. Bacteria and small particles that pass through the cilia are deposited on the moist surface of the nasal mucous membrane and are enveloped in the secretion of the mucous glands, which inhibits the growth of bacteria, and lie dormant until expelled from the nose. 7. Preparation or regulation of inhaled air, this is the most important function of the nose, and is dependent on the normal spacing of all nasal parts and a normal mucous membrane, the air passes through the vestibule, up to the anterior ethmoid regions where is is divided by the anterior end of the middle turbinate, two-thirds passing above into the superior meatus, one-third below into the middle meatus, while in this area the air undergoes one of four changes: 1. Cooling of overheated air, by the shrinking of the erectile tissue, thus increasing the size of the nasal vault, it is estimated that the temperature is reduced from eight to twelve degrees. 2. Warmed by the action of the nasal accessory sinuses and the erectile tissue of the middle turbinate, the venus plexi become ingorged decreasing the size of the middle and superior meati and giving off heat to the air, raising the temperature as required, from below zero to practically body temperature. 3. Drying, this is accomplished by the blanching of mucous membrane. 4. Moistening of dry air, this is accomplished by the secretion of the serous and mucous glands in the nasal mucous membrane, on very dry days it is estimated that from one to three pints of fluid are added to the inspired air by a normal muous membrane and sinuses. The functioning nose eliminates headaches of nasal origin, decreases sinusitis, and nasal, throat, and lung infections, thereby playing a most important part in the general health.

Examination of over two thousand cases of pulmonary tuberculosis showed that 84 per cent had obstruction in the ethmoid region, ninety of these cases were corrected by operation, with no apparent bad results, but the clinical charts did show a decided improvement in from one to two months time.

The functions of the nose are dependent on proper balancing of cavities, size and position of turbinates, and a functioning mucous membrane, primarily nasal obstruction is the result of an irregular, thickened or deflected nasal septum, which incroaches on one or more of the turbinates, this causes a shrinking by a compensatory atrophy of the erectile tissue, with a decrease in the size of the turbinate, the opposite turbinate endeavors to equalize the size of the nasal cnambers, by a hyperplasia first and later a hypertrophy of the erectile tissue, blocking off the opposite side of the nose, thereby limiting the inspired air to the inferior meatus and blocking or obstructing the ostei of the nasal accessory sinuses.

The erectile tissue of the nose only functions under normal conditions so that with disease or the absence of one of its turbinates the nose is unbalanced, and nature in her effort to equalize the nasal chambers makes this condition worse by hypertrophic, and later atrophic changes until nasal breathing is nothing more than tabular breathing, which carries the air directly back into the throat and lungs as inhaled, losing the protection to the sinuses, throat, and lungs.

The septum nasi being the primary cause of practically all nasal deformities should be placed in normal position first of all, if you wish to get a functioning nose, this can only be accomplished by submucous resection of the septum nasi, which if properly done will leave the chambers equally divided, from the standpoint of nasal space, but not of air space, with no loss of functional tissue except a thin line of scar tissue on the septal wall. The submucous resection does not correct the deformity, it is only a good beginning, the turbinates have to be balanced and the mucous membrane has to be stimulated or shrunken as indicated by its condition.

The turbinates are very amenable to treatment if there is no septal deformity and there are many procedures devised to correct turbinal irregularities, of which any method that will accomplish the desired result without the sacrifce of nasal tissue is satisfactory. After the bony parts of the turbinates are in position, if the air chambers are kept open. the soft tissues quickly pass through the same changes

that they had undergone because of the incroachment of the septum, except that the sides are reversed, the atrophic increasing in size and the hypertrophic decreasing to normal size. The atrophic mucous membrane is the most difficult to readjust, it is often necessary to use a bland oil spray or a soothing ointment in the nose for several years if you wish to get the maximal result.

The superior turbinate is very small and is dealt with as an extension of the posterior ethmoid cells.

The middle turbinate is the most important and should never be removed except in very narrow noses where the posterior ethmoid cells have to be exintegrated, and where it has undergone complete polypoid degeneration. The cystic turbinate can be opened at its inferior border and the cell fracturing the mesial or lateral wall as indicated by its position, or the lateral wall of the turbinate and cyst can be removed this will heal very quickly and will form a functioning turbinate because the cyst is lined with mucous membrane, consequently there is only a very thin line of raw surface. The shelf-like turbinates can be fractured at their base and placed in position, they rarely require packing. The ostei of the nasal accessory sinuses are sometimes occluded by an overhanging middle turbinate, this can be relieved by fracturing the turbinate at its base and elevating it keeping in place for four days with a small vasaline gauze pack, the packing should be changed daily.

The inferior turbinates are the largest and have more erectile tissue, which makes them more amenable to treatment. Hyperplasias of the inferior turbinate sometimes occur that cannot be relieved by local treatment, if the hyperplasia is limited to the anterior or posterior tip, it can be snared off without injury to the turbinate, if it involves the whole of the inferior border it should be shrunken down and enough of its lower border trimmed off with scissors to clear the floor of the nose, too much should not be removed because the turbinal tissue contracts much more than ordinary tissue. Hyperplasia is due to the presence of purulent secretion, and permanent relief cannot be obtained without removing the source of infection.

The inferior turbinate sometimes lies so close to the lateral wall that it obstructs the opening of the lachrimo-nasal duct, this can be relieved by fracturing it at its base, holding it in place with a pack for 4 days. The inferior turbinate may be crushed or have a sub-periosteal resection of the bone with gratifying results, when it is not possible to shrink them down to the desired size.

Deflected septi in children, up to the age of thirteen can be molded into position with a blunt Killian elevator, no packing is required to keep in place, this procedure gives relief in a number of the lesser deformities, and is worth trying before doing a submucous resection on a child.

CONCLUSIONS

Nasal tissues are exceptionally resilient when balanced and aerated. Cautery in the nose gives only temporary relief and destroys tissue. Turbinectomies are so rarely indicated, that we would be better off if we did not know the technique of their removal.

Any surgical procedure that has not for its object, position with due regard for conservation of tissue, should be condemned.

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SALVARSAN IN THE TREATMENT OF DISEASES OF THE EYE, EAR, NOSE AND THROAT*

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In selecting this subject for my paper I am aware that it is not a new one, nor will I present to you any startling revelation on the subject. Those of you who have used it as I have, doubtless have had many wonderful results from its use.

Adhering strictly to scientific technique there would be little or no excuse for my paper, because a positive Wassermann naturally suggests the treatment; therefore my excuse for selecting this subject is the fact that the word *SALVARSAN* is so generally interpreted as *specific* when mentioned in connection with a given case. When you mention the use of Salvarsan the idea of a specific case is conveyed to the average medical man.

My use of the drug has been so promiscuous that I have really been experimenting with its use, and have been accused of it and right here I am going to plead guilty. I have tried it out upon almost

*Read before the Section on Eye, Ear, Nose and Throat, Annual Meeting, Oklahoma State Medical Association, Tulsa, May 12, 13, 14, 1925.

everything that I have been called upon to treat for the last twelve years. With the fifteen thousand prisoners which I have had to look after the last few years, I have had ample opportunities to test out its good qualities.

I have been accused of becoming an enthusiast on the use of this drug, but I believe that my conclusions are conservative. The use of it in the diseases of the eye, ear, nose and throat, of course, is the subject of this paper, but should I digress a little from that limitation you may not be surpirsed.

When I show a case of corneal ulcer to a physician and make the remark that I gave him or her, as the case may be, *Salvarsan,* the question comes back at once. "Is it specific?" When I answer that I do not know, many of them look at me in wonderment. "Have you had a Wassermann made," is the next question, and when I also say "no" to that, then I am asked why I gave 606. The idea that it is good only for the treatment of syphilis is a prevalent one.

If I succeed in conveying the idea to the profession that *Salvarsan* is just as valuable in the treatment of hundreds of other diseased conditions as it is in the treatment of syphilis, then I shall have accomplished my aim.

I perhaps have had more Wassermanns made during this year than any other man here today, and shall continue to do so. I also say that I do not wait for them before administering 606 to many of my eye and ear patients. This may seem rather haphazard to some of you, but to my notion if you wait for a positive Wassermann in every case before using the drug referred to, you will overlook a very valuable agent in many non-specific cases.

By way of digression and suggestion, try it on some case of malaria, where your intravenous quinine and other remedies have failed; of course you have used it in pellagra, but try it in incipient tuberculosis, jaundice, in young adults, in deep abcesses where the serums have failed, and other conditions too numerous to mention. Of course, it is suggested that this be done cautiously, however, I have never observed any ill effect from its administration since I began using small doses.

Now with the report of a few cases where I have used it in the treatment of diseases of the eye, ear, nose and throat, and I will be through:

REPORT OF CASES: EYE

My first experience with *Salvarsan* in the treatment of eye diseases was in a case of traumatic corneal ulcer which had failed to respond to the usual treatment. For two weeks the ulcer showed no signs of improvement. There was no specific history; patient in good health and I could see no reason why the eye would not heal. Mentioned 606 to the man and he became offended. After some argument I persuaded him to take a small dose of *Salvarsan.* Within three days the eye had almost healed. A Wassermann test made later came back negative.

In these reports I am omitting all the detail possible, because I know they are tiresome. The age and name of the patients, detail of history, size of dosage, etc., is unnecessary for the purpose of my paper.

Since my first experience with the above mentioned case I have used it in hundreds of cases where the usual remedies do not bring results within a reasonable time. Some of these cases have been syphilitic; most of them have not. Among the other cases treated with Salvarsan in small doses are iritis, interstitial kerititis, and I have had some wonderful improvement in cases of trachoma. I do not use it in all cases, but I do use it in all obstinate cases. It does not cure them all, but it is a wonderful agent when it does cure, and does it right now.

EAR

In the ear I have not used it so much. I have had some good results from its use in otitis media in adults. In these cases I asked for no history and had no Wassermann made. I failed to get results in about fifty per cent of these cases. I have gotten good results several times in mastoiditis, at least the tenderness disappeared. These cases were where, for some reason the patient would not or could not be operated. Anyway it is worth the notice.

NOSE

In cases of diseases of the nose it has been my experience that those having positive Wassermanns are the only ones improved. My observation has been limited in this.

THROAT

I do not wait for a Wassermann in any obstinate case, before administering 606. I have them made usually for my own sat-

isfaction, but the usefulness of the drug is too well established in my mind to wait. A traveling salesman was my last observation along this line. He too, was offended and alarmed when I suggested the use of the drug for an obstinate tonsillitis in a fragment of tonsillar tissue which has been left after a tonsillectomy. He would not take it until he had had a blood test, which was negative. He had a second one made, also negative. He was newly wed and on his homeward trip to meet his bride. To say that he was alarmed is putting it mildly. He had taken treatment in transit, so to speak, the best he could do and keep traveling for his firm. He stayed with me a week and took daily treatments and did not improve at all. He finally agreed to take a dose if I thought that his throat would get so he could swallow food. I gave him a small dose and he left for his St. Louis home three days later, feeling that his new wife would be safe from infection by him.

If I had time I could report case after case of different conditions of the throat which I have treated. But case reports are boresome and statistics worse, so I will leave it with you with the admonition that if you will investigate its use you will find many places to use Salvarsan to your advantage in non-specific cases.

SYMPATHETIC OPHTHALMIA*

A CHRONIC INFLAMMATION, CHIEFLY OF THE UVEAL TRACT, PRECEDED BY EITHER INJURY OR DISEASE OF THE OTHER EYE. A COMPILATION.

W. M. JONES, M.D.
TULSA

We learn from Schirmer's monograph [1] that Bartisch recognized in 1583, that "an injured eye may shrink and become dangerous to the other eye," but it was not until 1840 that Mackenzie [2] of Edinburg gave the first detailed description of the disease and gave it the name we still use, sympathetic ophthalmia.

ETIOLOGY

Perhaps no field of medical research has offered greater opportunity for theorizing, and today after years of endeavor to determine the etiology, it still remains an unsolved mystery. However, the history of this chronic inflammatory process, including its occurrence after perforating injuries, after an interval of time, after enucleation, after intraocular sarcoma where perforating injury can be ruled out, its persistence and the anatomic findings in the sympathogenic eye, are all best explained by assuming microbic life in the second eye. The fact that no specific germ has been isolated may be due to its ultra microscopic size or to its resistance to ordinary stains, and in nowise disproves its presence.

THEORY OF TRANSFERRENCE

The theory of transferrence through a reflex action of the ciliary nerves was pretty generally accepted at the Heidelberg Congress in 1863, but Roemer in 1903, quite conclusively disproved this theory by showing that ciliary nerve irritation of one eye does not cause inflammation in the other.

The cytotoxintic theory of Brown Pusey [3] based on the experiments of Castaigne and Rathery showing that when the entire pedicle of a rabbit's kidney was ligated, certain degenerative changes took place in the other kidney, yet failed to occur if the ligated kidney was promptly removed; as well as the anaphylactic theory of Elschnig [4] which assumes a hypersensitive condition of the second eye from absorption of the degenerated uveal tissue of the injured eye, may both be discarded because, aside from other objections, they fail to account for the persistence of the inflammation after enucleation of the primary eye.

That sympathetic inflammation results from disease or injury to the other eye is accepted as a fact, but the manner of transferrence has in the past afforded so many theories and each based upon such anatomic reasoning as to lead one to the conclusion that it was quite possible for the infection to have followed different paths. However, I believe it is now quite uniformly held to be by means of the general circulation.

ENDOGENOUS THEORY

Meller of Vienna published in the German *Archives fur Oph.* an entirely new theory. This article was translated by the writer and published in the *Annals of Ophthalmology*, July, 1911, and is very nicely summed up in the words of E. V. L. Brown as follows: "The prevailing theory has

* Read before the Section on Eye, Ear, Nose and Throat, Annual Meeting, Oklahoma State Medical Association, Tulsa, May 12, 13, 14, 1925.

been that the infection entered the eye directly through the wound or other atrium from without. For this, Meller would substitute the following endogenous theory of the course of events; First, there occurs some form of damage or insult to the uveal tract, such as a penetrating wound, a toxic iridocyclitis from a necrotic sarcoma, etc,, which lowers the resistance of the part; second, some other part of the body than the eye is the portal of entry for the specific organism. This organism has an elective affinity for uveal tissue and attacks that of the diseased eye because of its lowered resistance. Here it finds a favorable medium for development and at length attains sufficient virility to attack the healthy uvea of the other eye. This endogenous theory better explains the cases in which no wound of any kind can be found to have occurred."

Reports by Schirmer, Fuchs, Meller and others of sympathetic inflammation following intraocular sarcoma or the primary eye are now so numerous and well authenticated as to leave no doubt as to their credibility.

PATHOLOGY

Although the etiology is as yet only a theory, the pathology presents a definite specific picture. [8] In discussing the pathology we are visualizing the anatomic findings of the sympathogenic (primary injured) eye, yet considering a disease of the other eye. However, it is known that the same identical pathology exists in the sympathizing eye.

In brief we find a round cell infiltration within the uveal tract, nodular in character, occurring frequently along the blood vessels. There is a tendency to the formation of epithelioid and giant cells, but without caseation. [8] "It is very significant that the uvea between the nodes may be entirely healthy and free from infiltration. This would lead one to believe that the disease does not progress from one part of tne eye to another by direct continuity of tissue, but in some other way." Later on, these nodules become fused together forming a thick infiltrate which is finally replaced by a shrunken layer of pigmented connective tissue. Meanwhile the blood vessels become obliterated by hyaloid degeneration.

It is the outer layer of the choroidea that is first involved and the process comes to full development within the choroidea, not upon its surface; a characteristic not found in the ordinary inflammatory process. The capillary layer of the choroidea is involved late, after the process has come to a full expression.

This sympthetic process is really a granulomatous infiltration inside the uvea, chronic in character, "resembling closely syphilitic and tuberculous uveitis but lacks necrosis and caseation, and does not quickly extend beyond the confines of the uvea," [7] Where the infiltration occurs around and extends along the blood vessels it frequently penetrates and is seen outside—external to the sclera.

The infiltration is more diffuse in the iris and ciliary body than in the choroidea; this is perhaps due to fusing of the smaller nodules. The lens frequently becomes opaque and is more or less surrounded by a fibrinoplastic exudate that binds the entire posterior surface of the iris to the lens capsule. [8] The vitrious is involved early and is largely destroyed. The retina is free from infiltration except along the blood vessels, yet as a result of the destruction of the choroidea and vitreous it becomes detatched, atrophied and entirely disorganized. A slight diffuse infiltration occurs in the end of the optic nerve, diminishing as the distance from the papilla increases.

As proof of the agreement between clinical and pathological findings, Fuchs studied 200 enucleated eyes and without knowing the histories selected 29 about which he felt safe to say, "These are sympathogenic—have caused sympathetic opthalmia." He was in error in only one case.

BLOOD PICTURE

In his study of the blood in these cases Cecil-Price-Jones, [9] found what he termed a "Mononucleosis." In nine cases studied the large monos were increased 170 per cent. While others admit the possibility of the above findings, they found cases with no increase, or even wiht a decrease in mononuclears.

Gifford found an increased leucocytosis in vernal catarrh, corneal abcess and even in normal health; hence, the blood picture is of no value in determining the pathogenesis or treatment.

IRRITATION VS. INFLAMMATION

As first pointed out by Donders [10] there is a "sharp and radical destinction between sympathetic irritation and sympathetic ophthalmia." The former is pure-

ly reflex in nature, causing photophobia lachrymation and transient amblyopia and never produces the latter. Again enucleation provides a prompt, definite cure in the former while in the latter immediate improvement is apt to be negligible.

CLINICAL FINDINGS

To make a diagnosis is no easy task for "there is nothing in the appearance of the second eye in sympathetic inflammation that is absolutely diagnostic, yet certain findings occur with great frequency." [11]

The patient complains of dimness of vision but very little pain. There is early a circumcorneal congestion with fine deposits of cells and pigment on the posterior surface of the cornea. The delicate surface outline of the iris is blurred and iritic adhesions to the lens occur promptly. If examined before the fine vitreous opacities obscure the fundus a mild papilloretinitis may be seen.

Later, as the inflammation continues the deposits increase, the iris thickens, the posterior synechia increase involving the entire posterior surface of the iris, producing a retraction of the iris root, while yellowish nodules and new formed blood vessels may be seen on its surface.

COURSE OF DISEASE

The above process may continue for years with remissions and recurrences; the anterior chamber becoming shallow, the pupil occluded with a fibrino-plastic exudate, the lens opaque, resulting in either a blind glaucomatous or shrunken eye. On the other hand, should the inflammation be controlled promptly there may be seen yellowish, sharply defined non-pigmented nodules which are pathognomonic. These nodules do not involve the macular region and vision may be retained to a surprising degree.

In considering any case of uveitis that gives a history of injury or intra-ocular growth of the other eye, one must eliminate such possible etiological factors as tuberculosis, syphilis, auto intoxication and focal infections.

However, since their presence does not rule out a sympathetic inflammation, it is much safer to institute appropriate treatment at once and eliminate later. For until we are enabled to isolate a specific organism, establish a definite reaction, or recognize clinically a characteristic inflammation, a definite diagnosis can be based only upon the anatomic findings of the primary eye.

CONTRIBUTING FACTORS

Trauma to the iris and ciliary body, whether from accident, operative procedure, or perforating ulcer, is an important causative factor. A few cases following nonperforating injuries and an even greater number following intraocular sarcoma have been reported. [12]

Since iris and ciliary body injuries are the ones most apt to cause sympathetic inflammation, they should be handled most skillfully, every effort being made to prevent infection and to free the iris from the corneal wound, or where the extent or location of the wound makes this impossible, to draw the conjunctiva over the wound and exposed uveal tissue.

Following extensive injuries it is much safer to use heroic medical measures to prevent sympathetic inflammation than to try to combat it after it has developed.

Retention of foreign bodies within the eye are indeed of serious import, yet they are dangerous only in so far as they tend to keep up the inflammation; nor does removal of the foreign body eliminate the danger.

The time interval following the injury is important. Most cases occur within from four to eight weeks, yet Weeks reported a case occurring 42 years, and Knapp a case 45 years, after injury. It is generally conceded that an injured eye that has been free from inflammation for several months or a year is not apt to cause sympathetic inflammation in the other eye, yet we must not forget the fact that an active inflammatory process may exist in the deeper part of the uvea with no external evidence of disease.

PROPHYLAXIS

Of all the various operations devised as prophylactic measures, only enucleation and evisceration are worthy our consideration. In the case of an injured eye, blind for weeks or months, there may be present a sympathetic infiltration that has extended along the blood vessels beyond the confines of the sclera. Evisceration in this case would remove only the major part of the pathology that is known to precede sympathetic inflammation in the second eye.

Mules evisceration operation, while producing a better slump, is followed by more

reaction, even by an occasional sluffing of the sclera in elderly patients, and except where done immediately following the injury is on theoretical grounds at least, a procedure frought with much danger. Enucleation is quite generally accepted as the safer operation, yet it must be remembered that sympathetic ophthalmia has occurred after both. The English committee on this subject found that enucleation seemed to be no safer than evisceration or Mules operation, "

Schieck reports 80 cases following enucleation, occurring within from 24 hours to 21 years, and shows that the severity bears no relation to the time interval. From the late war case histories, Morax has collected 39 cases, all of which followed enucleation and 2, evisceration. This is quite a contrast to earlier observations.

The factor of safety as regards the choice of operation is relative, yet definite as regards time, since sympathetic inflammation rarely if ever occurs before 14 days.

The removal of all foci of infection is a matter that must not be neglected if we would give our patient the full benefit of our present day knowldege. E. V. L. Brown reports definite improvement in a case of sympathetic ophthalmia from the removal of infected tonsils. "

TREATMENT

Where sympathetic inflammation has been fully established in the second eye, treatment may be outlined as follows: Prompt enucleation of the sympathogenic eye, if blind; atropin, augmented if need be with cocain and adrenalin; sodium salicylate in maximum doses; inunctions of mercury and regulation of the bowels.

Sodium salicylate, atophan, aspirin, and benzosalin are of equal efficiency, the dosage is the all important thing. Many other drugs have been recommended, but the salicylate treatment of Gifford has many adherents and in the hands of the writer has given very satisfactory results.

One grain a day per pound of body weight is the amount usually given, although in very obstinate cases it may be increased to double that amount. A patient weighing 180 pounds will take 15 grs. with an equal amount of common baking soda in a glass of hot water or essence of pepsin, four times the first day; 30 grains per dose the second day and 45 grains per dose thereafter, with no inconvenience except tinitis, slight deafness and profuse perspiration. Should delirium develop, atophan may be substituted. This is equally hard on the digestion but does not cause the same amount of head symptoms nor perspiration.

The patient should remain in bed in the afternoon and be careful not to catch cold.

After the inflammation is under control, full doses may be given four days a week, with one-half doses the other three days.

After the inflammation has been absent for three weeks, three-fourth doses may be given three days a week for three months.

Mercury inunctions are given daily one week in three. Optical iridectomy should be delayed for a year after the inflammation has subsided. Even where there is an increased tension operative procedure should be delayed as long as possible.

PROGNOSIS

Prognosis depends largely upon the time when the patient comes under treatment.

Morax attributes war time successes to the use of neosalvarsan, and reports 39 cases, with 14 bad and 25 good results. In contrast, Gifford in 1910 reported 16 cases with only 2 bad, 1 medium, 1 good and 12 very good results; vision 6/9 to 6/6. Gifford states that probably 75 per cent of all cases will retain useful vision if seen within the first week.

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FOREIGN BODY IN EYE: REPORT OF TWO CASES*

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For your consideration today I want to bring to your attention two case histories. These cases both effectively illustrate the need of a careful examination in every

* Read before the Section on Eye, Ear, Nose and Throat, Annual Meeting, Oklahoma State Medical Association, Tulsa, May 12, 13, 14, 1925.

case of eye injury. This is true no matter how trivial the complaint of the patient may be.

It is very easy for a good man with a large practice to overlook small holes in a cornea, especially if the patient casually presents himself, complaining but little. It is to this type of case especially that I want to draw your attention by presenting these two cases.

Case 1—C. H. W., a healthy adult male, apparently thirty to thirty-five years of age, came to our office January 25, 1925. His chief complaint was of failing vision and the sensation of a fog coming over his left eye. After a rather casual examination I found at the outer margin of the cornea, at about four o'clock, a small wnite scar. This scar was about 1 mm. long and of a hair's breadth.

The anterior chamber presented no pathology; there were no formed elements, and the chamber was of the same depth throughout.

The iris, normally of a blue color. was of a lighter shade in the left eye, and had a greenish sort of a cast.

The lens was clear throughout its entirety, so far as we were able to determine. The vitreous was clear.

The fundus examination revealed a whitish spot to the outer lower quadrant of the macular region. This spot began about two nerve head widths from the edge of the pappilla and extended upward and outward for a distance the diameter of the nerve head. It's width was about one-third of the diameter of the nerve head. The spot appeared to be an exudate for it completely masked the fundus details in the region involved.

After finding these things in the cornea and fundus, we elicited the history that seven months previously, while hammering on a bit, something flew in his eye. There was but slight inflammation of the eye at the time, but it persisted several weeks, which would be far too long for an injury that involved no more than he was told this involved. He visited one of the good men out in the state, and was told that there was nothing much the matter with his eye, just a slight abrasion of the cornea. After the inflammation persisted for several weeks he became suspicious and went to Oklahoma City. There he saw several good men. The first man told him there was nothing in the eye. The second reported he thought there was something in the eye, but did not push the matter very strongly and let it drop. Then two or three months later he came to our office complaining of failing vision in the eye.

After obtaining the above history, I again went over his eye, and this time I found a hole in the iris, immediately behind the corneal scar. The first time I went over the eye I took this hole to be one of the pigment lined crypts of the iris, but it was too conveniently located to be that. His vision at this time was recorded to be: right 20/15, left 20/40-1. At this time we took this diminution of vision to mean a degeneration of the eye due to the siderosis.

The pupil was dilated and the eye was repeatedly exposed to the giant magnet. This gave the characterisitc pulling pain that is elicited when a magnet pulls a piece of steel in an eye. Other than the pain, there was no evidence that the piece of steel had moved any.

This manipultion, however, set up a beautiful (so to speak) iritis which persisted in spite of all our atropine, for about ten days. After the inflammation had all cleared up, the pupil was still widely dilated, we decided to test the eye. Much to our amazement and contrary to our expectation, we found that a —50 sphere, combined with a —50 cylinder axis 165 improved his vision from 20/40 to 20/15. We promptly fitted him with this correction.

Then the question naturally presented itself as to how much of this poor vision was present before the injury. It was very evident that it was not due to the siderosis, for that cannot be improved by lenses. We all know that it is possible for that much error of refraction to be present for a great many years and the patient be unaware of it, until something like this happens to call his attention to the eye.

This patient has not since presented himself for observation, so I am unable to say as to his exact condition at the present time. But from all appearances the foreign body is thoroughly encapsulated and if that is true it may not cause any further trouble. But you all know that a foreign body remaining in the eye is a constant source of danger and often results in a degeneration of the eye. But since we were not able to move this body by the magnet and it is certain that any mechanical manipulation would surely result in a loss of the eye, because of its

location in the macular region, hopes of removal had to be abandoned. This would have been one case that had the magnet been used early the chances would have been excellent, the foreign body would have been removed, the vision unimpaired, and the chance of loss of the eye reduced to a minimum.

Case II—The second case was similar in all respects excepts results, This man, J. H., came to our office February 6, 1925, while the first patient was still under observation. These two cases being under observation at the same time is probably the reason that I remember them so well. He came to our office and wanted to know why his eye did not "clear up". He gave the history that three weeks previously, while running a pipe machine, he got some "oil in his eye." To this apparently trifling injury, he paid little attention. He told me that it smarted and burned a little, but he kept on working until quitting time. After he ate his dinner, he went to see his family physician, who told him there was nothing in his eye. Three days later, because the inflammation in his eye persisted, he went to see an eye specialist. This man examined the eye and told him that some foreign body had struck his eye and caused an abrasion of the cornea and then bounced off. The inflammation persisted and three weeks later he came to our office.

I immediately took his vision and found it 20/200 in the right eye. On examination I found a mild inflammation and a low grade iritis. At the top edge of the pupillary space about 11 o'clock I found a corneal scar about 1 or 2 mm. long and of a hair's breadth. The anterior chamber was clear and of the same depth throughout. In the lense immediately behind the scar and extending about half way across the pupillary space was an opacity. This cataract involved about the anterior half of the lense. There was no spot in this opacity that could be identified as a foreign body. But we thought that it was highly improbable that a foreign body should make such a small hole, penetrate so deeply and still bounce off the eye and not have the patient know that something had struck him in the eye. Furthermore, why should such a small corneal wound cause such a persistent inflammation if the foreign body was not still in the eye.

We could find nothing in the fundus, either in the form of a foreign body, scar or exudate. The pupil was dilated and the eye was repeatedly exposed to the giant magnet. This procedure elicited the characteristic pulling pain. No movement of the foreign body was observed however. The pain excited by the pull of the magnet kept getting worse and a deep pericorneal injection quickly developed, while the pain gradually increased. Because of the pain and the pericorneal injection, and also because the iritis was so persistent in the previous case we immediately instilled atropine solution and put the patient in the hospital.

The next morning the pain was still present but the pupil remained dilated That morning Dr. McHenry thought the cataract had a changed appearance, so fortunately we decided to try the magnet again. This time after several exposures from different angles the piece of steel was dislodged into the anterior chamber. The steel was thin and flat and of a nearly circular contour and about 1 mm. in diameter. This was then removed through a peripheral incision in the cornea. The eye was treated antiseptically and much atropine ointment instilled into the eye. The eye was bandaged and the patient put to bed in the hospital.

His iritis continued merrily in spite of powdered atropine and so forth for the next two weeks. At this time we could not see that the cataract had extended any. The corneal wound was healed and the inflammation all subsided so the patient was discharged and asked to return in a couple months. His vision was 20/200 however.

Two months later the patient returned as per request for observation. At this time it was found that if he would direct his line of vision to one side of the chart he could make out letters in the fifty foot line. This was such a slow process, however, that it could not be considered an industrially useful eye. He thought a plus 75 sphere combined with a plus 50 cylinder axis 60 helped, but it did not improve his vision any. The cataract had neither absorbed nor extended any. It still extended over half way across the pupillary space. The peripheral portions of the lense were clear and the fundus was free from any pathology.

From this fact he was advised that an optical iridectomy extending towards the inner canthus would in time give him binocular vision and would so improve his vision that he would not have more than a 25 per cent loss. He was also told that

about 80 per cent of the operations are successful.

Again at this time I want to call your attention to the fact that this foreign body was released from the lense in this eye only after exposure to the magnet the second time and this after there was a well developed iritis. This is the first time I have known of a foreign body to be removed on the second exposure and that after the development of a severe iritis. Whether the development of the inflammation rendering the tissue more succulent had anything to do with these facts or not, I am unable to say, but it looks reasonable.

These two cases closely simulate each other in that they both had a penetrating wound of the cornea, which inconvenienced the patient but very little immediately following the injury. In both cases the foreign body remained in the eye, and in each case a severe iritis developed following the use of the magnet.

There is no doubt that in each case, had the patients complained more bitterly, the first men on the job would have correctly diagnosticated the condition. In the first case this neglect might yet mean a serious loss, but in the second case it would have had the same result for the cataract was formed when the foreign body entered the eye. We all make these hasty, careless diagnoses in our rush periods. But I am presenting these apparently trivial cases as a plea for more careful, painstaking work in this class of cases.

PULMONARY IMMUNIZATION.

Certain tests made by W. H. Manwarning, Francis I. O'Neill, Kenneth W. Thompson and Leonard G. Dobson, Stanford University, Calif. (Journal A. M. A., Nov. 28, 1925), with actively and passively immunized lungs, give a conception of immunologic adaptation of fixed tissues not in accord with current views. They indicate the removal or the masking of the preliminary fixed tissue hypersensitiveness, the development of fixed tissue resistances that in themselves would fully account for immunity, unassisted by circulating antibodies. As the lungs of passively and of actively immunized dogs are apparently identical in these tests, the tests give no evidence that any tissue represented in the lungs acquires properties during active immunization that cannot be accounted for by the local absorption or fixation of circulating antibodies. The experiments, therefore, give no support to the current hypothesis that the main or sole site of antibody formation is in the reticulo-endothelial system. They do not, however, rule out the possibility of antibody formation by this system.

OKLAHOMA LABORATORY GETS FEDERAL RECOGNITION

We are advised that the Medical Arts Laboratory, of Oklahoma City, achieved a goal it had been striving for for several years, Federal license to manufacture and sell anti-rabic vaccine anywhere in the United States.

This is a great honor, as there are but 98 licenses of this kind in the country, and none in Oklahoma with the exception of that of the Medical Arts Laboratory. The inspection upon which the license was issued, was personally conducted by Dr. G. W. McCoy, Director of the Hygienic Laboratory, Washington, D. C.

GLAND THERAPY.

Some medicaments can be assayed, and thus standardized, by chemical means—such as belladonna, cinchona, hydrastis, nux vomica, etc.; others by physiological methods, as ergot, dilitalis, aconite, convallaria, etc.; but now that gland products are coming into such extensive use, how is the physician to be assured of their activity?

Some of them, it is true are tested by chemical or physiological means, for example desicated thyroid, adrenalin, and pituitrain; but for the majority there is no assurance beyond the care of the manufacturer in handling the fresh glands and applying suitable methods of desiccation or extraction. The hormones must be preserved; otherwise the gland product is simply so much protein. Here if anywhere the repuation of the manufacturer is a matter of prime importance. Physicians who are particularly interested in gland therapy should read what Parke, Davis & Co. have to say, in their advertisement in this issue about their methods of manufacture.

THE CUTANEOUS NEUROSES.

Joseph V. Klauder, Philadelphia (Journal A. M. A., November 28, 1925), stresses the fact that the psychologic phase of certain skin diseases should not be neglected in treatment. The application of medical psychology may be of considerable value in the treatment of certain skin diseases, objectively as well as subjectively manifested. A psychic cause of such common skin diseases as pruritis and urticaria should be included among the many causes of these diseases, although textbooks on dermatology make little or no mention of a psychic cause of pruritis and no mention of phychotherapy in these diseases. Klauder discusses the role of suggestion in the causation of cutaneous phenomena and cites cases of phychogenic types of pruritus and urticaria and other skin phenomena following phychic disturbances, such as the dermatophobias—acarophobia, rupophobia, bromidrosiphobia, trichotillomania and dermatothlasis.

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Local news of possible interest to the medical profession, notes on removals, changes in address, deaths and weddings will be gratefully received.

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EDITORIAL

NOW FOR THE ANNUAL ELECTIONS

Officers and members of all county societies are reminded of the importance of prompt reorganization of their societies at this time. It should be remembered that all memberships expire December 31st, and to save the county secretary having to go to the trouble of hunting up the member, telephoning and writing him, the member should take it upon himself to remit his dues without any sort of notice.

Each society should, if possible, hold a meeting in December and elect officers for the ensuing year, as well as outline work for the future.

THE BUSINESS SIDE OF MEDICINE

Very few of our members realize that one of the provisions of county constitutions under the great reorganization plan adopted universally in the United States some twenty years ago, called for at least one meeting annually, at which time the material interests of the physician individually and collectively was to be the subject of conversation. The wisdom of this provision must be apparent to any one who has his ear to the rough economic ground over which the physician is now floundering. Certain but sure encroachments are being made upon the medical income from many directions, principal of which is the physician's own immeasurable stride toward the curbing and lessening of disease. The physician's activity in furthering quasi State Medicine has in many instances swung the pendulum entirely from his own control, where it logically should be, into channels sometimes inimical to his best interests, and probably, in the end inimical to the public interests generally. A discussion of every thing affecting the physician is certainly not out of place at this time.

ONE TYPE OF ENCROACHMENT ON THE PHYSICIAN'S FUNCTIONS

The Chicago Medical Society, acting through its Council, November 10th, called attention to the fact that the American Public Health Association at St. Louis, October, 1925, heard proposals to establish a doctor of Public Health (D.P.H.) in each community where a health officer is needed; noted that several institutions of learning have introduced courses whereby laymen as well as physicians may be instructed, and in comparatively short time qualify as a Doctor of Public Health; and, that in all probability in Illinois a bill to license a so-called D.P.H. will be introduced in the next legislature; the Council without dissent voiced its opposition to such measures.

It was noted that first of all Health Officials should be physicians having the proper knowledge of the sciences concerned in Public Health, that such knowledge cannot be gained by any layman in a short time; that such arrangements only entail duplication of expense upon the community, which must eventually call upon the

trained physician, and that the State confers on the M. D. the right to practise medicine and surgery in all its branches, while special licensing of a D.P.H. would take from an M. D. that right. The Council resolution condemning this move transmits its action to all State societies, the American Public Health Association, whose president is a layman, and to the institutions concerned. Oklahoman's are placed upon their guard by this action.

ROUTINE PERIODIC EXAMINATION OF THE APPARENTLY HEALTHY

For several years it has been the policy of the American Medical Association and kindred organizations to foster movements tending to prolong and make human life more comfortable. One of the results of these endeavors has been the formation of plans for carrying out periodic examinations of the supposedly healthy person. The main features of the matter are that examinations be made at least annually—the birthday is suggested as the date most likely to be recalled by the person interested. Detailed plans have been formulated, which if followed will leave no reasonable effort overlooked to ascertain the condition of ones' health.

There are two features of the work, or problems, which must be noted and met in good faith if the work is to be of value. The physician must know his task; the layman must be taught the value of the work.

Every one knows the value of periodic checking up of human physical conditions, that is every physician should know, but many of them have never given the matter a thought. They are just here to answer calls and that ends the matter for the physician. It will require a long time to familiarize the layman with the great value of these examinations. However, it is being done well. In some sections of the country periodic examinations of the apparently healthy person are being made as a routine and they are netting the person protection and satisfaction, while the physician has his remuneration in increased income and satisfaction in having performed a sensible task in the proper manner. It is not contemplated that this work be done with a blare of trumpets and frothy publicity, but tnat it be made a serious part of the work of the medical profession, that the work be done and on its completion the person examined be given a concise statement of his physical shortcomings, with recommendations as to the best course to follow in clearing up any detected deficiencies.

The American Medical Association has formulated a blank which is practical, easily followed and covers the field. It may be had on application by those interested.

Editorial Notes—Personal and General

DR. JOHN S. STULTS, formerly of Olustee, has moved to Hollis.

DR. S. F. WILDMAN formerly of El Reno, has moved to 601 East 11th St., Oklahoma City.

DR. J. WORRALL HENRY, formerly of Pawnee, has moved to 727 West 17th St., Oklahoma City.

DR. ERNEST BALL, Antlers, returned recently with his family, after having spent a 6 weeks' trip visiting Honduras, Nicaragua, and other Central American countries.

DR. CLAUDE A. THOMPSON, Muskogee, was honored by a surprise birthday dinner on November 23rd, at the Severs Hotel, more than forty of his friends being present.

UNIVERSITY OF OKLAHOMA opened its newly completed Medical Building on November 23rd, at Norman, with a distinguished assemblage of guests, attending the exercises.

DR. J. E. ARRINGTON, Frederick, narrowly escaped serious injury last mont' when his car collided with a Ford truck, the doctor receiving a broken rib and a number of painful cuts.

DR. JOHN C. DOVELL, Paden, sailed November 19th, from New York, for the Belgian Congo, Africa, via Brussels, on the S. S. Zeeland, to assume a position as medical missionary in charge of the hospital at Wembo Nyanna for the M. E. Church.

AMERICAN BOARD OF OTOLARYNOLOGY —An examination was held by the American Board of Otolaryngology on October 19, 1925, at the Cook County Hospital, Chicago, with the following result:

Passed	120
Failed	23
Total Examined	143

The next examination will be held in Dallas, Texas, on April 19, 1926. Applications may be secured from the Secretary, Dr. H. W. Loeb, 1402 South Grand Boulevard, St. Louis, Missouri.

DR. J. T. MARTIN, Oklahoma City, delivered a health lecture to the students of Mount St. Mary's College recently.

DR. O. A. PIERSON, formerly of Woodward, has moved to Oklahoma City. Dr. Pierson has resided at Woodward for over 23 years.

DR. H. H. WILSON, Frederick, who has been sick for the past two months at Oklahoma City and Norman, has returned home feeling much better.

DR. H. H. CLOUDMAN, Oklahoma City, was the principal speaker recently at a Parent-Teachers Association meeting in one of the High Schools of Oklahoma City.

DR. R. H. FOX, Altus, has been appointed physician and surgeon for the Frisco Railroad, succeeding Dr. W. E. Sanderson, who has held that position for 10 years.

OKLAHOMA PHYSICIANS to the number of 250 registered on the first day of the Southern Medical Association meeting at Dallas. Oklahoma had probably the next to the largest representation of any of the States represented at the meeting.

JACKSON COUNTY MEDICAL SOCIETY met in regular meeting with a dinner on November 5, at Altus. The business session was held at the office of Dr. J. B. Hix and several clinical cases were presented. Thirteen doctors were present. The next meeting will be held at Eldorado in December.

WE PUBLISHED a statement last month that Dr. H. M. Stricklin, Tonkawa, had been appointed Chairman of the State Rehabilitation Committee of the American Legion; this should have read that Dr. Stricklin had been appointed Chairman of the State Hospitalization Committee instead. Dr. Hugh Scott, Medical Officer in Charge of the U. S. Veterans Bureau Hospital No. 90, Muskogee, is Chairman of the State Rehabliitation Committee.

WOODS COUNTY MEDICAL SOCIETY met November 24th, and elected the folowing officers for 1926: President, Dr. E. P. Clapper, Waynoka; Secretary-Treasurer, Dr. O. E. Templin, Alva; Vice-President, Dr. B. W. Saffold, Freedon, and Censor, Dr. D. B. Ensor, Hopeton. Papers were read by Dr. Arthur E. Hale, Alva, on "Scarlet Fever and its Prevention"; Dr. Elizabeth A. Grantham a paper on "Post Radiation Acidosis." A banquet followed at the Methodist Church given by Dr. George N. Bilby, at which Dr. A. S. Risser, Blackwell, president-elect of the Oklahoma State Medical Association, was the principal speaker, using as his subject "Scientific Doctors".

EYE, EAR, NOSE and THROAT

Edited by Jas. C. Braswell, M. D.
726 Mayo Bldg., Tulsa

Studies on the protein content of the aqueous humor; the effects of miotics and mydriatics. Adler, F. H., Arch. Oph., 1925, liv, 265.

The author conducted experiments to prove Seidel's contention that an increase in the protein contents of the aqueous humor following instillation of eserine is an indication of increased secretion by the ciliary body. The protein content was determined by refractometric and nephelometric methods.

After the use of eserine there was an average increase of 44 per cent in the protein content of the aqueous humor. The use of atrophine was followed by an average increase of 1.8 per cent. When atrophinization was followed by the use of eserine an average decrease of 16 per cent was found. After the use of pilocarpine the protein content did not increase. Removals of the ciliary ganglion, while dilating the pupil, lowered the protein content of the aqueous humor.

Ephitherial dystrophy and recurrent erosion of the cornea as seen with the slip lamp. Gifford, S. R.—Arch. Ophth., 1925, liv. 217.

Gifford believes that conditions called vesicular keratitis, disjunction of the corneal epithelium, and intermittent neuralgic vesicular keratitis have a common origin and are best described as epithelial dystrophy of the cornea, a classification suggested by Fuchs.

Vesicles and acute pain may or may not be present. Although the epithelium may be quickly regenerated, it is not firmly attached and recurrences are common. In Gifford's cases, folds of Descemets membrane were noted. The changes in the cornea seem to be due to lesions in the finer nerve branches of the cornea. The tension is usually normal.

The author believes that when glaucoma occurs, the condition is another manifestation of vasomotor instability.

Osteomyelitis of the Cranial bones secondary to paranasal sinus operations—Lillie, H. I.; Ann. Otol., Rhinol. and Laryngol., 1925, xxxiv, 353.

Osteoyelitis secondary to disease of the paranasal sinues is a very grave complication. The condition may persist for a long period. In Bryan's case it was apparently controlled by a radical operation, but after a period of eleven months, the patient died from a subdural abscess.

Radical measures are necessary even though deformity may result. In dealing with osteomyelitis secondary to disease of the paranasal sinuses, the present day conservative attitude toward radical paranasal sinus operations which result in a high percentage of cures but some deformity must be discarded. The X-Ray may show a picture quite typical of syphilis but when the sinus disease is present osteomyelitis must be suspected.

Capillary Suction as an Aid in the Treatment of Ear, Nose and Throat Diseases—Beck, J. C., Pollock, H. L., and Lederer, F. L., Laryngoscope, 1925, xxxv, 402.

The authors have employed capillary suction very extensively in their clinic, using various devices and forms of capillary tubes suitable to the areas treated. This method is of advantage because it avoids trauma, allows direct inspection, it has a wide application in work about the nose and throat and ear. In operative work it renders sponging unnecessary.

BACTERIOLOGY and PATHOLOGY

Edited by Wm. H. Bailey, A.B. M.D.
Wesley Hospital, Oklahoma City

"Archives of Pathology and Laboratory Medicine" —New monthly journal to be published by the A. M. A. announced in the Journal of the A. M. A., October 31, 1925.

As stated in the announcement there are already several periodicals devoted to pathology, both in this country and abroad, however, it was the belief of the various boards and committees appointed to consider this subject, that none of them were representive of all of American pathology.

The selection of the following men as the first editorial board: Dr. Ludvig Hektoen, Chicago, chairman of the board; Dr. Jas. Ewing, New York; Dr. W. G. MacCollum, Baltimore; Dr. William Ophuls, San Francisco; Dr. Alfred Stengel, Philadelphia; and Dr. S. B. Wolbach, Boston, will insure for the paper the highest standard of scientific efficiency and the assistance of the best authorities on Pathology and Laboratory Medicine in America. It will be a means of developing a purely American Pathology, the same as there has been developing an American Surgery and an American Internal Medicine.

The periodical will be broad enough in its scope to include original articles in the field of pathology and laboratory investigation, abstracts of current literature on pathology, the transactions of important pathological societies, news of those working in the field of pathology, a department of medicolegal pathology, reviews of new books on pathology, and monthly reviews of the present state of our knowledge of such topics as heredity, constitution and disease, lymphogranulomatosis, cancer, allergy, nephritis and nephrosis postmortem methods and new technical methods used in laboratories.

The announcement closes with the following:

The growth of scientific medicine has resulted, not in a departure from the fundamental investigations of anatomic changes within the human body during and subsequent to disease, as was perhaps expected by some, but, indeed, is an intensification of the belief that a knowledge of pathology is absolutely fundamental to successful diagnosis and treatment in every field of medicine. Virchow, it has been pointed out, realized that pathology embodies both the anatomy and the physiology of the abnormal organ. German investigators, however, concentrated their attention on morbid anatomy, and Great Britain and France up to fairly recent times practically limited pathology to anatomic findings in the postmortem room. The modern exeprimental conception of pathology, as pointed out by Flexner, has developed a type of pathologist who is at the same time investigator and teacher in the school of medicine and pathologist to the hospital, in intimate contact with the diagnosis and treatment of disease. Indeed, the modern medical school is likely to be built around the pathologic unit as the very heart of the institution. In this situation, when pathology as a science is beginning to come wholly into its own, it is well that American physicians should have from the first an authentic, independent organ ready to serve for the advancement of knowledge.

"THE NEW NOMENCLATURE IN BACTERIOLOGY"—Dr. Chas. Phillips, Richmond, Va., So. Medical Jr., Nov., 1925.

The sole object of the author's paper was to present a brief review of the recent proposal of the Society of American Bacteriologists to standardize the nomenclature of bacteriology in English.

The Society's committee has been at work on this re-classification for many years and submitted a report in 1923 in the form of a 422 page book, "Bergey's Manual of Determinative Bacteriology".

Bacteriology in general, is much wider in its scope than the narrow field with which the physician comes in contact. The group of disease producing bacteria is very small compared with the vast number met with in the allied sciences. The adoption of a bacterial terminology conforming to a botanical nomenclature which considers the family, species and genus of an organism must necessarily involve a tremendous volume of work. No other organization is better fitted for this work than the Society of American Bacteriology including in its membership as it does, men in all branches of this science.

Medical bacteriologists must fall in line with this new terminology, although, the names of many of our most familiar organisms are so changed that they are scarcely recognizable. Just as we have been made world citizens in a political sense, whether we wish to or not, so we must become international in our scientific relations if we are to retain our places in the scientific world.

It will be difficult for many to use the new terminology because we are all more or less inclined to follow the lines of least resistance. The metric system of weights and measures has been legal in America for 10 or 20 years, and yet how few of the younger people even know it today. It never can be established for every day use until it is popularized and taught side by side with the old system in our public schools. In the same manner the new classification of bacteria must be taught in our medical schools simultaneously with the terminology in common use today, so that the transfer to the new nomenclature will be gradual. This must be persisted in until the new finally supplants the old. The transfer of Bacillus typhosis to Eberthella typhi, of B. coli communis to Escheridia coli, and of Bacillus diphtheriae to Coryne bacterium diphtheriae will be a slow process of evolution in the average medical mind.

Text-books on bacteriology must carry a comparative index of both the old and new names, writers of articles on bacteriological subjects must use both classifications side by side, and above all, students of today must learn both systems and have them so fixed in their minds that they can use one as readily as the other.

Gastric Analysis; Joseph W. Larimore, A. B., M. D., St. Louis—The Journal of Laboratory and Clinical Medicine, October, 1925.

Kopeloff claims that single determinations of gastric acidity by the Rehfuss method are not sufficient on which to base conclusions, because they do not take into consideration individual variation.

The author in his experience on gastric contents uses the fractional gastric analysis, the technique is as follows: the Rehfuss tube is used. The patient is fasting and without fluid from the previous evening. The fasting gastric contents are aspirated, and the test meal is taken. The test meal consists of one shredded wheat biscuit (ground) and 400 c.c. of water with 1 c.c. of pheno-sulphone-phthalein. Aspirations of 10 c.c. samples are made every twenty minutes for five samples and with the fifth, the stomach is emptied. Before and after each aspiration one syringe full of air is injected. The fasting contents are measured, examined, and titrated. Each sample is titrated and examined. The last sample is measured.

The author states that fractional gastric analysis does not reveal the physiology of the stomach in all separate phases and does not exhibit these in an absolute evaluation, but rather the curve of the fractional analysis is the composite resultant of the present factors in the physiologic status of the stomach.

The valuable data of gastric secretions have not been better developed than by the above method. It does demonstrate alterations in gastric secretion and motility which are more or less diagnosic and helpful therapeutically.

Levinson Test in Tuberculous Meningitis; A. C. Pons, M. D. and Thelma Fletcher, Philadelphia, Pa.—The Journal of Laboratory and Clinical Medicine, October, 1925.

The precipitation test of Levinson depends upon these chemical reactions, first, proteins are precipitated as albuminates when treated with metallic salts such as zinc chloride, bichloride of mercury, etc., and precipitated as insoluble salts, when treated with weak organic acids, such as tannic acid, sulpho-salicylic acid, etc.

Levinson claims that in tuberculous meningitis that the bichloride precipitate is twice that of the sulpho-salicylic acid. The authors found in support of Levinson findings that in a number of cases in which they were able to establish the presence of the tubercle bacilli in the spinal fluid, either before death or at autopsy, the one to two rates of the two precipitates held good in practically all of their cases, furthermore, that in most cases they got this ratio before finding the bacilli.

The following routine was observed: The spinal fluid was received in two sterile test tubes, one being used for cell count, differential and precipitation test. Small test tubes 8 m.m. in diameter were used. We placed 1 c.c. of spinal fluid in each of two test tubes. To one we add 1 c.c. of a one per cent mercuric chloride and to the second 1 c.c. of a three per cent sulpho salicylic acid. The tubes are shaken well, stoppered and stood at room temperature for 24 hours. Measure the column of precipitate in millimeters.

Summary: A 1:2 ratio is very suggestive but not pathognomonic of tuberculous meningitis.

The use of stronger reagents along with those proposed by Levinson is suggested as increasing the diagnostic value of the test.

The test should be performed in every case of meningitis because (1) it is easy to do. (2) it is inexpensive. (3) It gives valuable diagnostic information.

TUBERCULOSIS

Edited by L. J. Moorman, M.D.
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The Effect of Mercurochrome in Experimental Tuberculosis of the Rabbit. H. J. Corper, Saul Mebel and Rose Silver—The American Review of Tuberculosis, October, 1925.

This series of experiments was undertaken to determine the local tissue toxicity of mercurochrome as well as its bacteriostatic and bactericidal action and its possible value in the treatment of tuberculosis by local and intravenous administration.

Four dogs were given 0.2 cc. of 2, 1 and 0.5 per cent. and four others were given 0.1, 0.05 and 0.01 per cent solutions of mercurochrome intracutaneously in order to learn the effect of intracutaneous injections of varying concentration. Each dog received 6 injections, 2 of each strength on the shaved abdomen. The findings were almost identical in the four duplicate dogs. The site of injection of 0.2 cc. of 2% mercurochrome became the color of mercurochrome at once with purple, raised ring of congestion around the deeply tinted central site of injection. There was apparently no diffusion of mercurochrome except that occurring on injection. The ring of congestion faded after 3 days leaving the highly colored center with an elevated, indurated margin. After 5 to 7 days the mercurochrome stained epidermis sloughed out leaving an ulcer with undermined edges and a pale pink neurotic floor. This was replaced in about 12 days by new granulation tissue, with healing in 3 to 4 weeks. The lesions produced by the 0.2 cc. injections of 1 and 0.5% solutions differed only in size and rate of healing from those produced by the 2% solution. The site of the injection of the 0.2 c.c. of 0.1% solution became pink with an elevated margin at once, with only a small elevated, indurated nodule which was free from color remaining after 3 days. There were no visible evidences of the injection after 1 week. The 0.05% solution produced a similar though smaller lesion which cleared up in three to four days while the 0.01% produced no perceptible changes. Sections taken 12 and 22 days after injection showed microscopically a skin ulcer with a granulation floor in various stages of scar-tissue formation.

It is therefore evident that intracutaneous injections of 0.2 cc. of concentrations of mercurochrome as low as 0.5% produce distinct tissue destruction while injections of 0.1 and 0.5% produce evident, though transient pathological tissue changes.

A series of 21 dogs were injected intratracheally to determine the value of mercurochrome in the local treatment of pulmonary tuberculosis and in the treatment of tuberculous cavities, also its effect on normal lung tissue. Five dogs were given 2.5 or 5 cc. of 2%; five, 2.5 or 5 cc. of 1%; three, 5 cc. of 0.5%; three 5 cc. of 0.1%; three, 5 cc. of 0.01% and 2, as controls, 10cc. of sterile normal salt solution. The 2 dogs given 5 cc. of 2% solution intracheally died after 20 hours and 3 days respectively from acute hemorrhagic pneumonia. Of the 3 receiving 2.5 c.c. of 2% solution, 1 was examined after 1 hour and showed an early pneumonic consolidation of both lower lobes; 1 died 22 hours after injection and showed a marked, acute, hemorrhagic pneumonia of both lower lobes; the third dog, examined after 12 days, showed several areas of consolidation in both lungs. Two dogs were given 5 cc. of 1% mercurochrome; 1, examined after 24 hours, showed a complete hemorrhagic pneumonia of the lower lobe of the left lung with a few pnemonic areas in the upper lobe of the right; the other dog died 22 days after injection and showed an organizing pneumonia with multiple focal abscesses in the lower lobes of both lungs. Of the 3 dogs given 2.5 cc. of 1% solution, one examined one hour after injection showed an early acute pneumonia of the lower lobes of both lungs and of the middle lobe of the right lung; another examined after 24 hours showed an acute hemorrhagic pneumonia of the upper lobe of the right lung and of both lower lobes; the third dog, examined 6 days after injection, showed a resolving and organizing pneumonia of the lower lobe of the left lung. The lungs of these 10 dogs were examined microscopically; the immediate effect was intraaveolar hemorrhage, the latter effects resembled a slowly resolving pneumonia with many local abscesses. Three dogs were given 5 cc. of 0.5% solution and were examined 24 hours, 3 days, and 2 weeks, respectively, after injection. The effects were similar to those produced by the 1 to 2% solutions. Three dogs received 5cc of 0.1% solution and were examined in 24 hours, 4 days, and 1 week. They showed marked tissue injury with more rapid resolution and repair however, than the dogs given higher concentrations showed. The dogs given 5cc of 0.01% mercurochrome and examined 24 hours, 3 days, and 1 week after injection showed few changes. The 24 hour and 3 days specimens showed a few suspicious areas while the 1 week lungs were negative. The lungs of the 2 dogs given 10 c.c. of sterile normal salt solution intratracheally as controls were negative on examination.

Eight dogs were given intrapleural injections of 0.1, 0.5, 1 and 2% solution of mercurochrome to study its effects on the normal pleura and to determine its antiseptic value in tuberculous empyema. Two dogs were given 5cc. of 2%; two, 5 cc. of 1%; two, 10cc. of 0.5% and two, 10cc. of 0.1% solutions. The pleural cavities of all these dogs showed marked changes; those receiving the 2, 1, and 0.5% solutions showing hemorrhagic pleurisy with acute hemorrhagic pneumonia, while those given the 0.1% solution showed a dry fibrinous pleurisy. These experiments together with the fact that De Witt found mercurochrome inhibitory to the tubercle bacillus in vitro in dilutions above 0.02%, while it required 24 hours exposure to 1% solution to kill them, would indicate that it has little value as a local antiseptic in tuberculosis whether used in pulmonary cavities or by intrapleural injection for empyemas or sinuses.

Fifty-four rabbits were used to determine the effect of intravenous injection of mercurochrome on tuberculosis. The rabbit was chosen for this experiment both because the dose of mercurochrome for it has been standardized and because experimental tuberculosis is usually pulmonary in it. Half the rabbits were infected with a virulent bovine tubercle bacillus in doses of 0.01, 0.0001, and 0.000,001 mgm. per pound body weight, the other half were infected with a human strain in amounts of 10, 1, and 0.1 mgm. per pound body weight. Each set receiving the same infecting dose was treated the same. One set receivd 5 mgm. of mercurochrome per kilo body weight, 1 hour after infection and daily for two weeks. The object of this early treatment was to have the mercurochrome act before the bacillus lodged in the tissues. Treatment for another set was started 1 week after infection and repeated daily for two weeks. The third set was given 2 mgm. of mercurochrome per kilo 1 day after infection and daily for 8 days. The lungs, liver, spleen and kidneys were examined in all these animals including the untreated controls and no appreciable effects from the treatment were seen regardless of when it was started.

OBSTETRICS and PEDIATRICS

Edited by Carroll M. Pounders, M.D.
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Observations on the treatment of acute cyclic vomiting of childhood with glucose solution and insulin—David Greer, Southern Medical Journal, June, 1925.

Glucose and insulin were administered to two unusually severe cases of acute cyclic vomiting in children with markedly beneficial results. The author thinks the good results can be attributed to the insulin. Attention is called to the fact that liberal parenteral administration of glucose solutions alone has not been very beneficial. 250 to 300 cc. of a five per cent solution of glucose in normal saline was given sub-cutaneously followed in about half an hour by ten untis of insulin hypodermically. The administration of glucose alone had previously resulted in glycosuria without relieving the symptoms. When given combined with insulin, sugar combusion seemed to take place normally, the ketosis subsided and there was marked improvement. It is suggested that there may be a decrease of sugar metabolism in cyclic vomiting.

Light and the antirachitic factor—C. E. Bloch, M.D., and Frans Faber, M.D.—American Journal of Diseases of Children, October, 1925.

The authors very carefully compared clinical experiences and observations of the action of light on different diseases with its effect on experimen-

tally produced diseases in animals. The chief object was to learn more about the relation between light and some of the vitamines, especially the so called antirachitic vitamin and vitamin A substance. Their conclusions are summed up as follows: From the present investigations and considerations thereon it appears that (1) Light and particularly ultraviolet rays have a stimulating effect on the organism which chiefly benefits those functions that are depressed. The curative action of light on rickets and tetany can be explained by such a stimulating effect. It is certain, however, that cod-liver oil has the same healing action on rickets and tetany as light has, although the former, in the quantities that can be given to children, acts more slowly and less surely than light. (2) As this effect is not due to the vitamin substance, there must be a stimulating factor in cod liver oil similar to that in ultraviolet light in addition to the vitamin A substance. It is pointed out that Alfred F. Hess and Steenbock, Nelson and Black have shown by animal experimentation that fats and other food materials, which are without effect on rickets, can be rendered active for experimental rickets merely by exposure to ultraviolet light. Eleanor Margaret Hume and Hannah Henderson Smith have shown that exactly the same is the case with sawdust. (3) This proves that the non-specific stimulating factor must be the ultra violet rays. (4) It is believed that the hypothetic antirachitic vitamin does not exist.

The comparative nutritional value of white and whole wheat flour—C. Ulysses Moore, M.D., and Jessie Laird Brodie, B.A.—Archives of Pediatrics, Sept., 1925.

Three litters of white mice were used containing twenty-eight animals. One-half of each litter was given a chemically adequate and balanced diet containing 'best patent unbleached flour" as their only source of starch and of vitamin B. The other half of each litter was given the same basal diet, the "patent flour" being replaced with a whole wheat flour containing the entire kernel. A properly balanced ration was made up by adding a purified casein, butter, and a salt mixture. The group fed on whole wheat increased in weight four times as rapidly as did the ones on white flour. The whole wheat seemed to improve the appetite so that this group consumed twice the food eaten by the ones on white flour, making the gain in weight, per unit of food consumed, double that made by the group fed on white flour. Those on whole wheat were healthy, happy, contented and had much greater resistance to cold weather while many of those on white four developed paralysis, the fur became clumped and abnormally oily, and three died. When the white flour group were given the whole wheat diet, they rapidly gained weight, their fur became normal and they seemed contented, this furnishing positive as well as negative proof of the superiority of whole wheat.

It is pointed out that the dietary difference between white and whole wheat flours is largely a diffrence in vitamin B. Modern milling removes this necessary food factor. The experiment demonstrated that, based on the relative cost of the two flours, whole wheat flour is worth nearly twice as much for nutritional purposes as white flour.

Bacteriological Findings in Acute Dysentery in Children—Geo. F. Klugh, M.D., Atlanta, Ga.

A preliminary report of work done on acute dysentery in children with blood and mucus in the stools is presented. It was found that only two organisms are usually responsible, namely: bacillus dysenteria and streptococcus. The dysentery bacillus was found to be serologically and culturally of the Flexner type. Streptococci in abundance in the stools are secondary to respiratory infections, especially tonsillitis. It is believed that carriers bear the same relation to dysentery as to other bacterial diseases. Cultures of stools from normal infants are negative for the dysentery bacillus.

There is no known method of ridding a carrier of his infection. Most children probably acquire immunity by ingestion of small numbers of more or less attenuated organisms from carriers. There is less immunity during the second summer than at any other period during life. Vaccination is believed to be a good prophylactic measure, especially during epidemics. Anti-dysentery serum is effective if given early. Theoretically lactose and acidophilous milk seem to be ideal foods, but probably small amounts of easily digested foods are absorbed before they reach the infected area.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M. D.
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Clinical Case Report.—Severe Infantile Paralysis Deformity.

Case 1. Miss M. S., age 14, female, white, school girl.

Examined in Clinic May 9, 1923. Referred by State Health Officer, Dr. A. R. Lewis.

History: At the age of three years had attack of infantile paralysis. Both lower extremities were affected. The right leg gradually recovered to the extent that it could be used with the aid of crutches. The left has never been used since the attack and she has always used crutches.

Examination: The left leg has practically no motor power. There is slight power of hip flexion due to the action of the tensor fascia femoris. This muscle has caused a flexion deformity at the hip of 15 degrees. The femoral head is in the socket but the hip is practically flail. There is a marked knock knee with slight action in the biceps and the foot is flail. The right leg has good muscular action but the posterior tibial muscle is paralyzed giving her a marked flat foot. The left leg measures about 2½ inches shorter than the right.

Treatment: She was advised to have the hip deformity corrected, the knee stiffened by arthrodesis and the ankle stablized by astragalectomy. She refused the knee joint arthrodesis. However, the tensor fascia femoris was released at the anterior superior spine of the iluim by the Soutter method and the knock knee corrected by forcible stretching and manipulation without osteotomy. A plastic spica was applied from chest to toes and worn for six weeks. The case was then lost track of for over one year. Upon return the hip and knee deformities seemed well corrected. A brace was applied which would limit hip action to flex-

ion only, would entirely limit knee action and limit ankle action to slight flexion and extension. The extreme flailness of the ankle and foot seemed to be a handicap and the ankle movement was therefore stabilized by removal of the astragulus and displacing the foot backward according to the Whitman technic. On application of a brace once more she became able to use the leg for weight bearing.

BEFORE AND AFTER CORRECTION OF DEFORMITY.

One year later, September 9, 1925, a new brace was made consisting of a close fitting celluloid casing from groin to the ankle and a stop hip joint, pelvic band. This allowed her to wear a nice shoe on her foot which matched the right foot on appearance and as a stocking could be worn over the brace, the cosmetic effect was much improved.

Within two months she was using only a light walking stick for support as she walked.

Discussion: The regrettable feature of this case is that she had been told by more than one physician that nothing could be done. The result was, she failed to use the affected leg and an undue amount of atropny and shortening was the result. If the paralyzed leg had been properly braced from the start, the bones would have maintained normal growth and no deformity would have occured.

Report of the bone and joint section: Southern Medical Meeting, November 9, 1925.

The Clinic Monday at the Hella Hella Temple Hospital for Crippled Children was unusually instructive and interesting. The class of work certainly demonstrated that the big Eastern Clinics have no monopoly upon progressive surgical technic.

Doctors W. B. Carroll, Sim Driver and others demonstrated among many other interesting cases the end results of twenty-five cases of spastic paralysis upon which they had performed the sympathetic ramisectomy as advised by Doctors Royle and Hunter of Australia. The conclusions of the operators as well as the spectators were that the operation produced a very definite improvement in the gait. It did not produce, however, any spectacular relief of spasticity and in most cases the results were very indefinite. The question was raised as to what caused the improvement. Was it due to a release of the plastic tone as described by Royle or was it due to the increased circulation which was noted in all cases. Further conclusions were that at least a period of one year should be permitted to elapse before attempting any further cases so as to be able to judge how permanent the improvement would be.

The program of this section consisted of papers which are of great practical interest to one in general practice. It is hoped that they will receive proper attention as they appear later in the Southern Medical Journal.

Treatment of Chronic Recurrent Dislocation of Shoulder by Crucial Capsular Plication.—W. L. Keller, Annals of Surgery, January, 1925, p. 143.

Keller reports eleven cases treated by plication of the anterior portion of the capsule, which he explores by the axillary route along its posterior margin and directly over the humeral head. The capsule is freed from the axillary contents when a crucial incision, one limb upward and one crosswise, is made in it. The margins of these incisions are overlapped by a type of mattress sutures reducing the laxity of the capsule to a minimum. The operation was conceded a failure in one case. The rest have been successful.

As nine of the cases were operated upon in 1923 and 1924 it is possible that the chapter on recurrences is not permanently closed.

Abduction Treatment of Fracture of Neck of Femur.—R. Whitman, Annals of Surgery, January, 1925, p. 374.

In a well illustrated and brief article Whitman very definitely, if not dogmatically, expounds his well-known ideas of the proper care of fractures of the neck of the femur by the abduction spica, and concludes his robust polemic with the following pungent paragraph: 'At the present time the opposition to the general adoption of the abduction treatment is rather of the nature of inertia than of loyalty to the ancient ritual, the chief objection being, apparently, that its application, particularly the adjustment of a secure and comfortable plaster spica, requires more skill and experience than is possessed by the 'average worker.' The proposition, in effect, that incompetence should disqualify the treatment rather than the surgeon, however, logical under the old dispensation is no longer tenable. For traditional authority having been disproved and discredited can no longer assure immunity for inadequacy and inefficiency, and neglect."

Haematogenous Osteomyelitis.—By William T. Doran and Leslie Brown, Surgery, Gynecology, and Obstetrics, May, 1925, p. 658.

The report is taken from the Surgical Service of the Bellevue Hospital of the last four years. On account of the age limit none of the patients was over twelve and one-half years of age.

There are six tables showing comparative figures under the headings of age, organism found, part involved primarily, bone affected, treatment, duration and progress.

There are eight skiagrams showing bone lesions during the course of tretment. The report seems very impartial and records the bad results as well as the good. The conclusion of the authors follows:

Conclusion: The necessity of early diagnosis and proper surgical treatment cannot be too vigorously advocated. Too few of the cases in this series were recognized as osteomyelitis in early stage, when proper surgical intervention would have promised a short convalescence. The majority of these that did receive early care recovered within four months on the average. Early surgical treatment is the only means of reducing the morbidity and mortality. If sufficient drainage is instituted in the early stages destruction of the cortex is avoided and convalescence is short. If the time from onset to operation is measured in hours, the convalescence is measured in weeks; if measured in days, the convalescence is measured in months or years.

BOOK REVIEWS

SYMPTOMS OF VISCERAL DISEASE, a Study of the Vegetative Nervous System in its Relationship to Clinical Medicine, by Francis Marion Pottenger, A.M., M.D., LL.D., F.A.C.P. Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, California; Author of: "Clinical Tuberculosis", "Tuberculin in Diagnosis and Treatment", "Muscle Spasm and Degeneration", etc, Third Edition, with eighty-six illustrations and ten color plates, cloth 394 pages, price $6.50, C. V. Mosby Company, St. Louis, 1925.

A TEXT-BOOK OF MEDICAL DIAGNOSIS. (Third Edition, Entirely Reset) By James M. Anders, M.D., Professor of Medicine, Medico- Chirurgical College, Graduate School of Medicine, University of Pennsylvania; and L. Napoleon Boston, M.D., Associate Professor of Medicine, Graduate School of Medicine, University of Pennsylvania. Third Edition, Entirely Reset. Octavo of 1422 pages, 555 illustrations, some in colors. Philadelphia and London; W. B. Saunders Company, 1925. Cloth, $12.00 net.

This is one of the completest volumes ever issued concerning medical diagnosis. Not only does it deal widely with the diagnosis of the strictly medical matter, but it also undertakes to present the diagnosis of the border line case and that type of cases which ordinarily come under the observation of the family physician or medical attendant before they have the advantage of surgical consultation. This is of the greatest importance to the patient as upon prompt recognition of signs and symptoms his future welfare if not life may hinge. The work contains the diagnosis of all the obscurer conditions met with in wide general work and has been brought up to date in every particular.

THORACIC SURGERY. The Surgical Treatment of Thoracic Disease. By Howard Lilienthal, M.D., Professor of Clinical Surgery at Cornell University Medical School. Two octavo volumes totaling 1294 pages, with 90 illustrations, 10 in colors. Philadelphia and London, W. B. Saunders Company, 1925. Cloth $20.00.

The greater part of these two volumes is devoted naturally to Surgical Diseases of the Lungs, though no other phase of Thoracic Surgery is relegated to a minor position. In addition to the wide field covered in the text there are special articles on Physiology by Evarts A. Graham; Roentgenology by Leopold Jaches; General Anesthesia by William Branower; Blood Transfusion by Reuben Ottenberg; Thoracic Aneurysm by William C. Lusk and the treatment of Pulmonary Tuberculosis by Induced Pneumothorax by J. Burns Amberson and Andrew Peters. The author discusses at length the indications pro and con for the use of local anesthesia in thoracic surgery. He makes out a good case for the use of local anethesia, noting however, that class of cases wherein it is best to use a general anesthetic if possible. More than one hundred and twenty pages are devoted to a discussion of the indications of artificial pneumothorax. It is listed as a highly valuable adjunct in the treatment of certain types and conditions, but does not overlook the need for every other measure which may benefit the case in question. The volumes are finely and profusely illustrated, many in color.

ALLERGY, Asthma, Hay Fever, Urticaria and Allied Manifestations of Reaction. By William W. Duke, Ph. B., M.D., Kansas City, Mo., with seventy-five illustrations. Cloth. 339 pages. Price $5.50. C. V. Mosby Company, St. Louis, 1925.

In simple concise language, Dr. Duke has presented the difficult subject of Allergy. The book is decidedly clinical and was written for the general practitioner by a clinician of practical experience. It it well worth a busy practitioner's time to read the book in its entirety for he will be struck with the frequent and protean manifestations of hypersensitiveness and be able to understand numerous of his own cases that have heretofore gone unclassified and unexplained. There are numerous case reports placed throughout the book, which increases its instructiveness. The illustrations are numerous, the legends clear and worthwhile and adapted by the author admirably to clarify the subject matter.

The bibliography is extensive and very properly placed together in the back of the book.

—R. A.Wolford.